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A JOURNAL OF HORTICULTURE LANDSCAPE ART AND FORESTRY

SEPTEMBER 23 1891

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Among the contents of next week's issue (No. 188) will be the following articles:

Pinus Jeffreyi. (With illustration.)
Editorial.

The Forest-trees of the Upper Mississippi.
By Professor L. H. Pammel.

Protecting Half-hardy Plants in Winter.
By Professor W. F. Massey.

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The Possibilities of Economic Horticulture.

"SOME of the Possibilities of Economical Botany" was the subject selected by Professor Goodale for his valedictory address as President of the Association for the Advancement of Science, and it is one of exceptional interest. An attractive field of speculation opens before us at once as we begin to inquire what plants the coming man will use for food and forage, for timber and tanning, for fibre and cordage, for perfumes and flavors and medicines. This is especially true when we are reminded that of the more than one hundred and ten thousand species of flowering plants known to exist on the globe, scarcely one per cent. are utilized to any considerable extent by man. If we include the Ferns, Mosses and Liverworts, the Algæ, Fungi and Lichens, the percentage of utilized plants will be much smaller still. The questions discussed by Professor Goodale were: How can this short list of useful plants be increased to advantage? What likelihood is there that our future food-supply will include other vegetables, fruits and cereals than those we now use? Will new fibres replace those we now spin and weave? Will new remedial agents be discovered among plants now unknown or neglected?

Omitting a consideration of the cereals we find that the plants which would be more strictly classed as horticultural have undergone remarkable transformations under cultivation. Wild Cabbage, a tall perennial weed of open growth, shows to the unscientific observer scarcely any likeness to the garden forms with which he is familiar. The largely developed leaves of some of these forms are imbricated and overlapped into a compact spherical, conical or flattened head; others, like Borecole and Kale, have branching leaves; in some, like Broccoli and Cauliflower, the flower-stems have been transformed into fleshy edible masses; in others, as in the Kohl-Rabi and Turnip-rooted Cabbage, the stem or root has been developed into a large ball, and there are others still with modifications in the ribs of the leaves or in the axils of the shoots, or in several organs together, to produce such varieties as Brussels Sprouts, the Marrow Kales and many more. The Cabbages have been cultivated since the earliest historic time, and no one knows how many years of selection have been needed to produce these striking morphological changes. But the Tomato is younger as a garden-plant. It is a native of America, but, although cultivated more than three centuries ago in Europe, it has come into general use only within the memory of men still living. It is not unreasonable, therefore, to suppose that there are many garden-plants now used only to a limited extent which merit a wider employment, and which we may hope can be developed into much wider use. Professor Goodale names some of these, and he also suggests that we may expect to obtain from Japan, for example, whose flora is closely related to our own, many other vegetables which are already used there. Dr. Curtis, of North Carolina, has suggested that we have in the unutilized Mushrooms an immense amount of available food of delicious quality, and we may add that researches now in progress at the Experiment Station of Indiana prove that many other Fungi furnish nutriment of the best quality, and that they can be largely improved by careful selection.

The improvement which has been made in oranges, pears, apples and other fruits, within historic time, suggests that there is an opportunity for much further development, and Professor Goodale adds that there is no reason why we should not have strawberries without seeds, blackberries and raspberries with only delicious pulp, and large grapes as free from seeds as the small ones which we call currants, but which are really grapes from Corinth. Coreless apples and pears, stoneless cherries and plums, must be propagated by bud division, it is true, but bananas and pine-apples have been propagated in this way for centuries. Then, many of our wild fruits are promising subjects for selection and cultivation. The common Blueberry and its allies are, no doubt, worth trying to improve, and so is the Juneberry and others. The eastern coast of Asia will, beyond question, add largely to our future fruits, and it cannot be long before the list is considerably increased. Professor Goodale went further, and discussed the probability of new timbers and cabinet woods, new vegetable fibres and tanning materials, new resins and new plants for fragrance and flowers, and spoke of the need of systematically investigating plants of promise under the most exhaustive conditions. When our botanical gardens, museums and laboratories of economic botany, as well as our experiment stations, work together, with the co-operation of all persons interested in scientific matters in the domain of commercial and industrial botany, we may reasonably hope for discoveries of immediate and growing importance.

But there are possibilities of horticulture in other directions which are well worth considering. As increasing population presses upon the world's food-supply it is a matter of interest to know to what extent the productive powers of the earth can be increased. As new fruits and vegetables are brought into use we ought to be learning how to obtain the greatest quantity from a given area within a given time, and with a given outlay of labor and expense. Even now the difference between the amount of wild fruit which an acre will naturally yield and the amount of the same fruit which an equal area, carefully prepared, will yield under cultivation is enormous. An acre of wild Cranberry-vines, fighting for life with the other vegetation in a swamp, would give but a few bushels at most, and these could only be gathered at considerable trouble; but on the leveled and sanded bogs of Cape Cod the uniformly loaded vines on a single acre have yielded a hundred and fifty barrels, and even more, of choice fruit, or a barrel of berries to every square rod. This is accomplished by thorough preparation, sleepless care, clean cul-

ture and the proper use of fertilizers. The market-gardeners about Paris are able to pay $125 a year rent for an acre of land and yet make a good living. A thousand bushels of potatoes to the acre can hardly be counted an impossible crop in this country, even with our present knowledge, and in the island of Jersey the money returns from a glass-covered garden of thirteen acres exceed those of an English farm of thirteen hundred acres.

But it is not reasonable to assume that the best crops which can be produced with our present knowledge illustrate the maximum productiveness of the soil. As we learn more of the laws which govern the growth of plants we ought to be able to supply conditions more and more favorable to the highest success. We have much to learn, for example, of the relation of light to plant-growth. Experiments at Cornell University have shown that Lettuce, by the use of an electric light, can be forced to sufficient maturity for table use in six weeks from planting, while eight weeks are required to grow plants to the same size without the light. There is little doubt that further experiments will prove that artificial light can be used to still better advantage in many cases. The French market-gardeners have already found it profitable to warm the soil by hot-water pipes, and this indicates another direction in which, especially when glazed sashes are used to cover the ground, vegetation can be hastened, and additional crops secured from the same land every year. Sub-irrigation, especially with diluted sewage, has multiplied production enormously in the neighborhood of some European and American cities, and the systematic use of this waste matter is yet in its infancy. The mines of Stassfurt and the rocks of South Carolina are already furnishing potash salts and phosphates at small expense, and new discoveries may render these elements of plant-food cheaper still. Nitrogen is yet expensive, but when some economical method is discovered of collecting it in available form from the limitless supply of that material in the air, garden-crops can be cheaply fed with all the nutriment they are able to assimilate. It has long been known that microscopic plants do an important work in the soil in preparing food which plants can take up and digest, and these organized ferments will, no doubt, in time become articles of commerce supplied by special breeding establishments.

Altogether, we may hope, without presumption, that, in the times next ensuing, our improved fruits and vegetables, as well as plants for ornament, can be grown more rapidly, more abundantly and more cheaply. Increased knowledge now enables us to hold in check plant-diseases and injurious insects, before which we were powerless a few years ago. Recent progress in the science and art of gardening justifies the belief that study and experience will in like degree increase our knowledge of the relation of light and heat and moisture, as well as of the mechanical and chemical constitution of the soil to the development of plants, and we shall devise means of controlling these conditions more perfectly and of adapting them more intelligently to horticulture as a business and as a diversion.

Monuments in Public Places.—IV.

ANOTHER important question in the out-door placing of works of sculpture is whether they shall be seen from every side, or from one or two sides only. A figure or group not specially designed for a given spot is, of course, most beautiful when, as we walk around it, each step reveals new beauties of line and mass; and great injustice is done alike to the artist and the public if such a work is set where only one aspect can be appreciated. But, on the other hand, it is unfair to artist and public if a work that looks its best from one side only (and very likely has been designed simply to be thus beheld) is stationed so that the back will be as clearly seen as the front. We can thus imagine works which would be very unfairly treated if placed along the Mall in the Central Park, as here their backs could be seen only if a forbidden walk on the grass were taken; but there are many others to which, for the same reason, a place like the Mall offers the kindest possible hospitality. In general, seated statues are eminently well fitted for such a place as this, as their backs can seldom be given any strong quality of interest.

This question of desirable points of view is even more imperative than the question of scale in prescribing that, when a definite commission is given for a monument, the artist should know in advance just where it will stand; he can then decide whether he must consider all of its aspects with equal care, or may subordinate some to concentrate his attention on the one that will be of primary importance. Such subordination, by the way, even if it amount to total sacrifice, is a perfectly lawful and laudable exercise of the artistic prerogative. There is no more reason why the back of a statue standing out-doors should be as beautiful as the front if the back will never be clearly seen, as why similar care should be bestowed upon one that is to be fixed in a niche in a wall, or upon the groups of a pediment. If, when a statue is ordered, the sculptor is not told just where it will stand, then upon its completion he, and no other, should choose its place; but, of course, in view of the possibility that no thoroughly good site may present itself, it is always best that the question of site should be a preliminary one.

Works of sculpture, or of architecture and sculpture combined, are just as appropriate to a pleasure-ground when their value is simply artistic as when they are monumental, historic in character. Indeed, as the chance that a high degree of beauty will be secured is greater in such works than in commemorative ones, it is especially desirable, for the sake of the public's pleasure and the development of its taste, that these should be the ones generally placed in our parks. When they are concerned the question of site will almost always arise after the artist has finished his work; but it should be as carefully considered as with regard to portrait statues, and likewise their pedestals should be as carefully designed. For neither class of objects is a simple, plain base always the best; and nothing less than the best should ever satisfy us in constructions of so permanent a sort.

It would be well, too, if those who give non-commemorative works of art to our parks would intelligently consider what special kinds are fitted for such service. Of course, no general rule can be laid down; but we may say that, broadly speaking, a statue or group for out-door placing is best when it has a definite out-door character itself. The Falconer in the Central Park, to which we have already referred, is, in idea, an excellent out-door figure, and so is Mr. Ward's Indian Hunter; while the group called Auld Lang Syne seems to cry out for a roof above its head, and no one would care to see under the open sky a figure, for example, of a mother rocking her baby to sleep. Questions of exact placing, moreover, are involved in the general question of appropriateness. Ward's Indian Hunter looks well standing on the edge of the road under a spreading tree; but a portrait-statue would look badly there, and very badly, indeed, perched on the rocky slope where we can see the Falconer without strong objection. In certain retired nooks, provided some other formal elements were present to sustain their own artificial character, we can fancy little groups of animals or figures of a rustic character looking well, though a commemorative bust or figure would seem sadly out of place.

For obvious reasons, it is less easy to give the right out-door look to a seated statue, even of a purely commemorative kind, than to a standing or mounted figure; but such a one might look better in portions of a park, where people sit at rest and the idea of repose is prominent, than in a city's streets. Seward, poising his pen on the corner of Madison Square, looks sadly out of place, and many travelers must have noticed in London the almost comically inappropriate air of the seated figure of George Peabody surrounded by the rush and clamor of the busy city. Sometimes the architect might well be called in to

the aid of a seated statue, to furnish not merely a fitting base, but some sort of a canopy or roof which will mitigate the impression that it ought not to be out-of-doors. It would be interesting to know just how the Greeks and Romans treated this question of seated statues; it almost seems that they must have preferred to place them under porches or colonnades rather than boldly beneath the sky; but, in any case, our climate is not the climate of Greece, and a statue sitting placidly with its lap full of snow does not produce a very fortunate effect.

Finally, the question of treating the ground around the base of a monument should be given due attention. The equestrian statue of Washington in the Public Garden at Boston is excellently placed, near the boundary of the pleasure-ground at the intersection of its main paths. But, this summer at least, it has had a curiously inappropriate look which, upon examination, was seen to result from the wide bed of tall, ornamental plants encircling its base. The profusion of these plants hid the connection of the pedestal with the soil and thus deprived it of solidity of aspect, while their freely waving leaves had no artistic relation to its rigid lines. Did it rise naked from the smoothly clipped grass it would look much better, but, best of all, if partly draped in a closely clinging vine which would not disguise its form, and, instead of separating it from the ground, would more intimately connect the two. Nothing is more beautiful than the way in which the French use Ivy to drape the pedestals of their open-air statues, and even where these stand, as we think they should not, in the centre of open lawns, the mistake is partly condoned by unifying creepers. So far as we remember, the French never surround a statue with a high growth of foliage-plants or a wide pattern-bed of flowers. The distinction between a right and a wrong method of treatment is here perfectly clear and valid: the vines unite themselves to the monument and unite it to the ground, while the pattern-beds supply a third element which has no vital relationship to either turf or stone. The good effect of vines on pedestals may be studied in a few places in this country also, as on the pedestal of the Webster in the Central Park. One would like to see them planted around the statues on the Mall as well, and, afterward, carefully restrained from undue luxuriance. For such a purpose, we need hardly say, the best possible creeper is the so-called Japanese Ivy, which looks as though nature had invented it to serve the architect's needs. The Ivy is not so certain to prove hardy in our climate, and, though the Ampelopsis loses its foliage in winter, even then its beautiful net-work of delicate branches seems to tie the stones to which it clings to the bosom of mother earth.

Formally clipped plants, growing in simple but handsome pots, would sometimes be appropriate around the base of a monument, especially if it were placed on a terrace; and in certain other cases a plantation of shrubs may be desirable, though rather as a background to the pedestal than encircling it. Such a background is positively needed by the Farragut monument on Madison Square, and was, undoubtedly, contemplated by its makers. It will look much better than it does now when, from the rear, only the figure itself is visible.

When we think of the variety in effect that might be secured to our parks by monuments carefully planned for given situations—as for niches in foundation-walls, for the crowning of balustrades and bridge-parapets, the adornment of drinking-fountains, the completion of rond-points, and the lining of formal avenues—most of what has been already done in these places seems unimaginative and monotonous. The chief trouble has been that we have thought too little of the question of site. When we order a statue we are too indifferent as to where it may go; when we buy one already made, we are too careless in its placing. Whatever thought we have thus far given has been directed to the works themselves; now we should begin to think of them in a wider way, as chances for the architect as well as the sculptor, to give more care to the matter of appropriate and helpful bases, and especially to use the utmost pains and invoke the most skillful help in their eventual placing.

Northern Plants in Pennsylvania.

THAT part of the Appalachian Mountains between the west branch of the Susquehanna and the Juniata, in Pennsylvania, would be thought rather tame and uninteresting by the lover of mountain scenery. Although erosive action has been enormous here, as in other mountain regions, the absence of any but local glacial action has left a surface but little varied. There are no lakes or ponds, and but few and small marshes, while the low mountain-ridges, running north-east by south-west, are frequently so close together as to leave only long narrow valleys, or even none at all.

But the interesting features in any region are always multiplied by search and careful examination, and if extensive surface waters are here unknown, the great springs in the limestone districts and the frequent sinks or disappearance beneath the ground of streams of considerable volume are sure to attract the attention of the traveler and excite his curiosity and interest.

Years ago I was told that somewhere in these mountains ice accumulated so abundantly, and was so well protected from waste, that it remained through the whole year. As time went on, and no such place could be found, it was put down as one of those exaggerations to which new-comers are so often treated. But one day, picking up General Brisbin's "Trees and Tree-planting," this astounding statement was found in the introduction, where the natural features of this very district were being described: "If we turned over a rock in the mountain-side we found ice beneath it even in the hottest days of August." Having turned over a great many rocks on that particular mountain-side, and never having found any ice in August, the whole matter was cast out of mind as useless rubbish, when within a very short time an interesting botanical discovery was made. *Linnæa borealis* was found in a wood which had been under close observation by botanical students for a number of years, and yet I knew of no record that the plant had been seen here before. Running over the back numbers of the *Botanical Gazette* to see if this or other northern plants had been recorded from this part of the state, an interesting note was found (vol. ii., p. 8), from Mr. J. R. Lowrie, of Huntingdon County, in which not only were such species named, but their persistence in a given instance was credited to the perpetual ice which was found among the rocks in late summer about three feet below the surface. The precise locality was named, and visits to it have shown much of botanical interest, besides confirming, in the main, what was said regarding the ice.

Spruce Creek is a small tributary of the Juniata running parallel to Tussey Mountain for several miles. About three miles above its mouth, near Colerain Forge, in Huntingdon County, it cuts close in to the mountain-side, and by wearing away the easily eroded Utica shale has exposed a nearly vertical wall of the overlying Oneida sandstone. For ages this cutting and scouring have been going on until at the base of the wall, and running into the stream itself, lies a heavy talus of broken rock from the undermined cliff. In the interstices of these rocks ice forms readily in great quantity in cold weather, and such is the protection afforded by the sweep of the mountain itself as well as by the cliff, that but little direct sunshine is received, and that only in midsummer. Until then it is only necessary to throw aside a few blocks of stone in order to reach the ice, but as the season advances it retreats further and further until late summer, when it is frequently, probably commonly, so deep that it is inaccessible except by a great deal of labor. But its presence is shown by the low temperature of the rocks and the surrounding air. Bending low in any of these ice-holes one's breath quickly becomes visible, as on a winter's day in the frosty air. No ice could be seen at the date of my last visit, August 28th, but old residents in the vicinity are quite positive that in some years ice has been taken out during the entire season, although it was necessary to dig deep for it during August and September.

While a large part of this talus is completely bare, there are portions of it which support a poor growth of the ordinary trees and shrubs of the vicinity. But near its base are found, particularly, our Mountain Ash (*Pyrus Americana*), Canoe Birch (*Betula papyracea*) and *Ribes prostratum*, none of which are common elsewhere in the neighborhood, except at occa-

sional points at greater elevation. Of humbler plants, *Heuchera pubescens* and *Linnæa borealis* are the most conspicuous, the latter, in great profusion and of great vigor, spreading widely under the adjacent Pines and Hemlocks, where it seems perfectly at home. One can scarcely imagine a more perfect example of a high northern flora localized on a few square rods, because of favorable temperature conditions.

As if to give emphasis to this little boreal colony among the rocks, there is found, scarce two hundred yards away, a narrow intervale bordering the stream, which here makes another abrupt turn. Upon this alluvial bottom grow a score or more of vigorous Papaws (*Aximinia triloba*), with trunks six, eight and ten inches in diameter. Their lustrous dark green and pendent leaves mark them at a distance as distinct from any other native tree, and suggest a grove of Horse Chestnuts. They must have been here a long time, for they seem perfectly established, fruit readily, and young trees are not uncommon. One such clump, strangely placed high and dry on the border of the dusty pike two hundred yards away, seems quite successful in its struggle for existence. Professor Porter long ago told me that the Papaw followed the Juniata, and was found at the mouth of Spruce Creek. He may have referred to these same trees. I know of no others to the north, and infer that these mark the furthest point for this species in the mountain districts.

A fine *Aristolochia Sipho*, clambering over and well-nigh smothering a Red Cedar, seemed to add to the southern character of this Papaw bottom.

A grove of stately White Pines completes the attractions of this unique spot, which is a favorite picnicking ground for the neighborhood. In the early summer such parties frequently make ice-cream on the spot, using the ice taken out of the holes in the rocks.

State College, Pa. *W. A. Buckhout.*

Notes on North American Trees.—XXVIII.

THE synonymy of the Texas Cercis, or Red Bud, is peculiar. This plant appears to have been first collected by Berlandier, in the region of the lower Rio Grande, as long ago as November, 1828, one of his specimens of that date being preserved in the Gray Herbarium. Lindheimer, many years afterward, found it at New Braunfels and sent it to Engelmann, who called it *Cercis reniformis*, but did not publish his name, or anything about the plant. Gray, in the second part of the "Plantæ Lindheimerianæ" (*Bost. Jour. Nat. Hist.*, 1850, p. 177), was the first author to describe it, making it a variety of *C. occidentalis*, "var. *floribus etiam paulo minoribus, foliis supra nitidioribus*," referring to the *C. reniformis*, Engelmann, but without taking up Engelmann's manuscript name for his variety and without giving it another. Torrey next mentioned it in 1859 in the "Botany of the Mexican Boundary Survey" as *C. occidentalis*, confounding it with the California species, and Hemsley, much later, did the same in his "Botany of the Biological Survey of Central America." Watson, in his "Bibliographical Index to North American Botany," next called the Texas Cercis *C. occidentalis*, var. *Texensis*, but in the "Botany of California," and later, in a list of plants from south-western Texas and northern Mexico, collected chiefly by Dr. Edward Palmer in 1878–80, and published in vol. xvii. of the *Proceedings of the American Academy*, called it *C. reniformis*. This name, as of Engelmann, had, moreover, appeared many years before without description in Roemer's work on Texas, in which it was, no doubt, included by Scheele, who supplied the botanical parts on the strength of specimens which Engelmann had probably sent to the Berlin Herbarium, with which he was always in active correspondence.

From this it appears that the first published specific or varietal name is Watson's *C. occidentalis*, var. *Texensis*, and the Texas plant, being considered distinct from the California species, should be called *C. Texensis*.

Mr. Sereno Watson calls my attention to the fact that the date of the publication of Ventenat's "Description des Plantes Nouvelles et peu Connues Cultivées dans le Jardin de J. M. Cels" is not 1803, as I had supposed, but 1800, which, being the date of the publication of *Robinia viscosa*, that name must take precedence of *Robinia glutinosa*.

C. S. Sargent.

Filices Mexicanæ.—I.

WE take pleasure in offering our readers an enumeration of the Ferns collected in the states of Nuevo Leon, Jalisco, San Louis Potosi and Machoacan, Mexico, during the seasons of 1888, 1889 and 1890, by C. G. Pringle, of Charlotte, Vermont, with notes and descriptions of new species and varieties by George E. Davenport, of Medford, Massachusetts.

Mr. Pringle's Fern collections are now so well known that it may be of interest to preface these notes with some extracts from his correspondence, in which he describes the regions where, for the most part, the Ferns herein enumerated grew. Writing from Chihuahua, under date of August 4th, 1888, he thus described Monterey and vicinity, where, during the early part of 1888, his collection was principally made: "Delightful are my memories of Monterey, a quiet pleasant city, with lofty precipitous mountains round about it on three sides, mountains furrowed with cañons shady with numerous grand trees, and musical each with its clear, cold brook. It is the paradise of Ferns! Common as any weed on the foot-hills which overlook the city was *Adiantum tricholepis*, so rare hereaway. On limestone ledges or bluffs, soft and crumbling, whose bases were laved by water, was *Aneimia adiantifolia*. *A. Mexicana* was very abundant on moist shaded banks of the base of the Sierra Madre. *Aspidium trifoliatum* on limestone ledges dripping with water. On moist shaded banks *Cheilanthes meifolia* (Palmer's find of 1880) was abundant; with it a Pellœa which I don't know, and an Aspidium strange to me. What I guess to be *Llavia cordifolia* was common near brooks of the mountains, and rare there a Polypodium which I never saw, and in their dark, cold nooks still another Polypodium, with annual fronds. Here, of course, *Aspidium patens* was luxuriant, and sometimes *Pteris Cretica*."

Pellœa flexuosa, *Cheilanthes leucopoda* and *Cheilanthes aspera* are some of the other Ferns mentioned by Mr. Pringle in the letter just quoted. Subsequently, on his return home to Charlotte, he sent to me the following interesting account of "The Haunts of Ferns about Gaudalajara":

"Some six miles northward from the city the great St. James River (Rio Grande de Santiago) which carries the overflow of Lake Chapala down to the Pacific, falling more than 5,000 feet in a course of 250 miles, has cut a chasm through the plains which the proud city crowns, and among various chains of low mountains which interrupt those plains and this chasm is the great barranca of Gaudalajara. You stand on the verge of the plain and see the river rushing white 1,500 feet below you. Beneath your feet are dizzy cliffs on cliffs, steep grassy slopes and still deeper descents which are a luxuriant growth of tropical shrubs. Here and there, over these steeps, springs start from the rock or rise from the soil, and streams leap down to the river. Against the face of fearful precipices they hang as a slender veil of a waterfall, or they saturate the rich soil of the thickets. All the diverse situations on the slopes of the great barranca are the favorite haunts of some Fern or other, whether it be the dry cliffs in sun or shade, the ledges of cliffs sprayed by falling water, the deep shade of thickets clustered by brook-sides, the cool and moist grassy banks, or the mossy banks and ledges in the humid forests near the river.

"Down to the river from among the hills come lesser cañons, each with its noisy brook, which sometimes pours over a precipice in its way, and diffuses over the adjacent walls a perpetual mist or spray.

"Again, just north of the city walls, a strange thing has happened. The occasional floods from the plains above have cut gullies, sometimes broad, grassy and shaded with trees; sometimes too narrow to admit the passage of your body. The walls of these are twenty to fifty feet high, perpendicular, firm sand or gravel, more or less moist. From the foot of these walls water drips, and close by a a brook flows.

"Still, again, there are conditions favorable to Ferns supplied by man. It is customary to mark the bounds of highways and fields by trenches five to ten feet deep. Along the edges of these are planted, or grow spontaneously, Cactuses and shrubs, so that shade is provided.

"At the end of my stay I crept for a long way through the vegetation filling a trench of this sort which borders the north side of the highway leading westward from the city gate; and I remember declaring to a friend, as I came out of it, that I had seen on its steep moist banks nearly all the Ferns which I had met with in all the region roundabout.

"Now you can form a definite idea of the habitat of the species of my collection from the words borne by their tickets."

The numbers herein used should correspond to those on Mr. Pringle's tickets accompanying his distribution.

ACROSTICHUM ARANEOSUM, D. C. Eaton (2590). Shaded cliffs near Guadalajara, November, 1889.

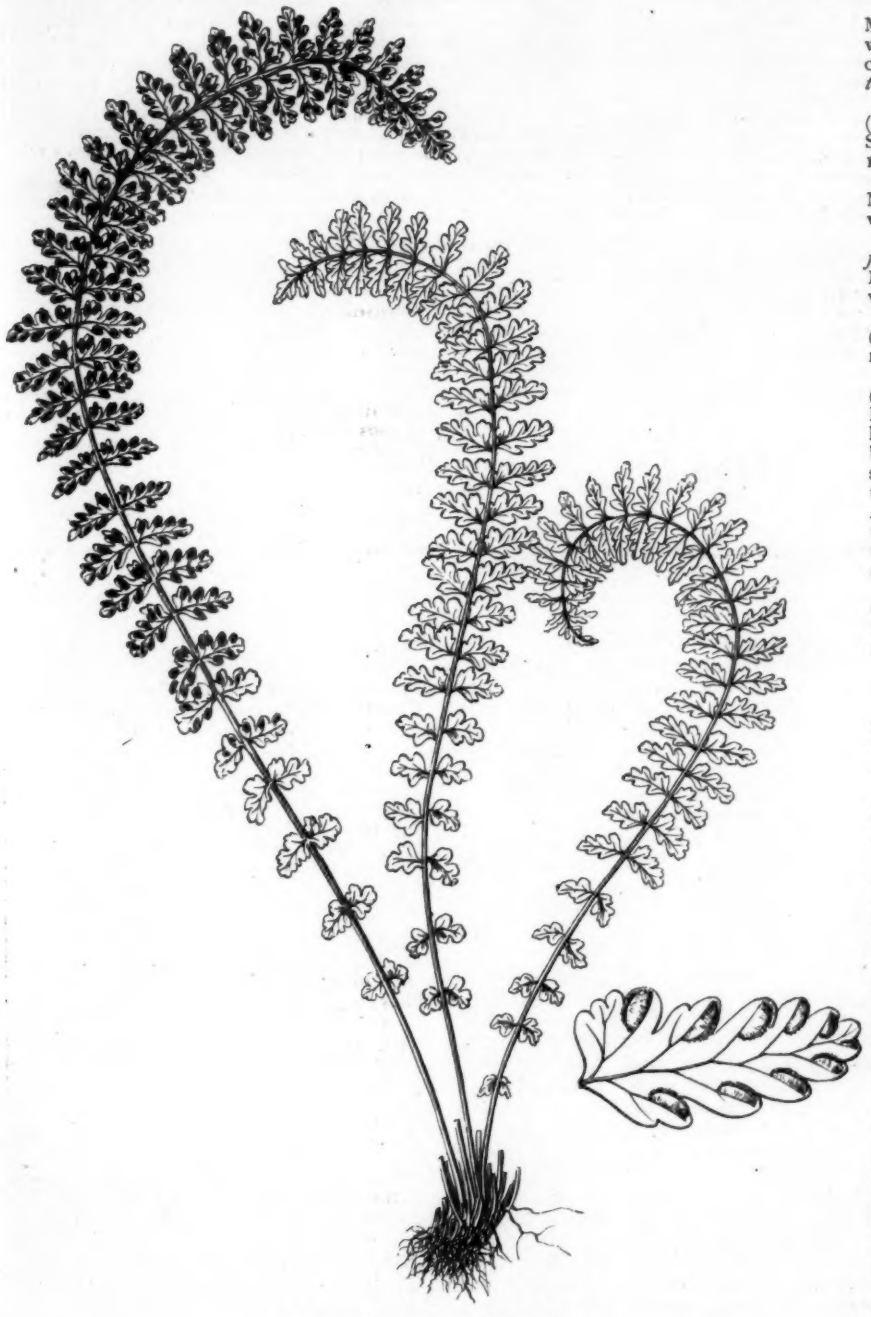

Fig. 71.—Asplenium Pringlei.—See page 448.

ACROSTICHUM SPATHULATUM, Bory (2606). Cool damp bluffs near Guadalajara, November, 1889.

ADIANTUM CONCINNUM, H. B. K. (1866). Moist shady banks near Guadalajara, November, 1888.

ADIANTUM CONVOLUTUM, Fournier (1868). With 1866.

ADIANTUM PATENS, Willd. (1869). Cool grassy slopes of the Barranca, November, 1888.

ADIANTUM TENERUM, Swartz (3360). Cool ledges, Tamasopo Cañon, San Luis Potosi, 1890.

ADIANTUM THALICTROIDES, Willd. (1867). Moist shady banks, Guadalajara, November, 1888.

ADIANTUM TRICHOLEPIS, Fée (1981). Foot-hills near Monterey, abundant; (1843) moist shady places in the Barranca, near Guadalajara, December, 1888, scarce.

ANEIMIA ADIANTIFOLIA, Swartz (1977). Moist calcareous river bluffs, Monterey, June, 1888.

ANEIMIA HIRSUTA, Swz. (1833). Moist slopes near Guadalajara, November, 1888, and with it a deeply cut form approaching Baker's var. *tenella*.

ANEIMIA MEXICANA, Klotzsch (1976). Moist ledges and banks, Sierra Madre, near Monterey, June, 1888.

ANEIMIA PHYLLITIDIS, Swz. (3361). Moist shady banks, Las Canoas, November, 1890.

ANEIMIA TOMENTOSA, Swz., var. *fulva*, Hooker and Baker (1834). Moist slopes, near Guadalajara, November, 1888.

ASPIDIUM ACROSTICHOIDES, Swz. (2604). Sierra Madre, near Monterey, August, 1889.

ASPIDIUM ATHYRIOIDES, M. & G. (*Nephrodium syphærocarpum*, Hook.), (1840). Wet banks and ledges, near Guadalajara, December, 1888. This and *A. patulum*, it seems to me, are scarcely more than forms of one protean species, *A. Mexicanum*. The differences between them all are hardly greater than those which exist between the different forms of *A. spinulosum*.

ASPIDIUM JUGLANDIFOLIUM (1982). Cool, shaded cañons, near Monterey, June, 1888; and again in Tamasopo Cañon, June, 1890.

ASPIDIUM MEXICANUM, Kunze (2605).

ASPIDIUM PATULUM, Swz. (3362). Shaded ledges, hills of Patzcuaro, November, 1890. See remarks on *A. Athyrioides*.

ASPIDIUM TRIFOLIATUM, Swz. (1983). Wet ledges and banks, Sierra Madre, near Monterey, June, 1888.

ASPLENIUM CICUTARIUM, Swz. (3365). Rich soil, mountain sides, Tamasopo Cañon, November, 1890. Specimens remarkably fine and beautiful.

ASPLENIUM ERECTUM, Bory (3413), normal form; (3412), var. *proliferum*, Hooker, both from rich forests, Tamasopo Cañon, November, 1890; and (3367) var. *sub-bipinnatum*, Hook., from rich soil, mountain sides, Tamasopo Cañon, November, 1890. The last two very proliferous.

[NOTE.—I have preferred to follow the authority of Sir William Jackson Hooker here, in using Bory's name in preference to *A. lunulatum*, Swartz, notwithstanding the eminent authority of Mettenius and Kunze, because, if, as Dr. Hooker stated in the "Species Filicum," no authentic specimen and no authentic intelligible description of Swartz's species exist, and if, as Dr. Hooker asserted, the plant itself was really unknown to Swartz, it is difficult to understand upon what justifiable grounds the adoption of Swartz's name rests.]

ASPLENIUM FRAGRANS, Swz. (3364). On rocks and trees, Tamasopo Cañon, November, 1890.

ASPLENIUM FURCATUM, Thunb. (3363). On Oaks, hills, Patzcuaro, state of Machoacan, November, 1890.

ASPLENIUM PRINGLEI, *n. sp.* (1837). Root-stocks tufted; fronds clustered, 3′ to 9′ tall, ½′ to ¾′ broad in the middle,

narrowed both ways, evergreen, pinnate, with from twenty to thirty pairs of variable oblique pinnæ; stipites short, blackish brown, naked, or with a few slight scales at base; pinnæ generally subsessile, 2" to 5" long, half as broad, deeply cut into irregular oblique obtuse lobes, unequally wedge-shaped at base, cut away most on the lower side, and sometimes almost if not wholly dimidiate, often truncate at base on the upper side with the superior basal lobe again deeply cleft into incised lobes; lower pinnæ gradually reduced, more equal-sided, ovate, slightly stalked, with cuneate or truncate bases, and cleft into three incised lobes; rachis, blackish brown, like the stipes, channeled, flexuose, curving from above the middle into semicircles; sori large, borne on the free veinlets in two to four pairs, each sorus, when mature, filling an entire lobe, and set obliquely to the costa.

Habitat: Wet cliffs, near Guadalajara, state of Jalisco, December 5th, 1888. This very lovely Fern bears some resemblance to the incised form of *A. Trichomanes*, and it is closely allied to that species. It differs from that species, however, conspicuously by the unusual size and position of the prominent sori, which are placed within and near the edges of the lobes, so that the fructification appears to be marginal, and by the remarkable curvatures of the exceedingly flexuose rachises. In some specimens there appears to be a slight membraneous edge running along the sides of the rachis and round the margins of the pinnæ, having the appearance of a faint bloom when held to the light.

The excellent portrait of this Fern, on page 449, is from a drawing by Mr. C. E. Faxon.

Foreign Correspondence.

London Letter.

THE end of the flower-season in the open-air garden is approaching, and the Dahlias almost monopolize the attention of florists, for the unusually wet and cold August has been disastrous to such flowers of the sun as Gladioli and Lilies, which are the features of English gardens in August. This week I have had a look in at some of the nurseries, and the finest flowers of the season, to my mind, are the hybrid French Cannas at Cannell's, at Swanley. No doubt, the grand productions of Crousse have already crossed the Atlantic, and your lovers of brilliantly colored flowers and noble foliage already have the older kinds under cultivation. These gorgeous plants have come upon us all of a sudden, for I know of no flowers that have been improved in such an extraordinary way in so short a time, and our French neighbors seem to have been at work upon them before we were aware of it. The French florists seem to take the initiative in the production of new races of garden-plants, which they do with few exceptions; Roses, Gladioli, Delphiniums, Ivy Pelargoniums, Montbretias, Chrysanthemums, Caladiums, of all of which we have now such a variety, are mainly due to the enterprise of the French hybridists. These Cannas are well worth a long journey to enjoy, for the brilliancy of their flowers en masse rising from their handsome foliage is different from the ordinary run of greenhouse plants. There are now a good many sorts, mostly all with French names, but those that pleased me most were the following: Paul Bert, a noble, tall-growing variety, with broad leaves stained with plum-purple and large Gladiolus-like flowers of a brilliant orange-red; Francois Morel, three feet high, flowers an intensely deep crimson; Keteleeri, dwarf flowers, orange-scarlet; Edouard André, brilliant orange-scarlet, rather tall, and certainly one of the finest; Wilhelm Pfitzer, flowers large and of the richest deep crimson, remarkably showy; Madame de Grillon, flowers yellow, with red centre; Jules Chretien, flowers large, brilliant scarlet; Comte de Choiseul, dwarf, only about one and a half feet high, and similar in color to the last; Admiral Courbet, cherry-crimson; Professor David, a very distinct sort, with flowers scarlet, blotched and margined on the petals with yellow; Legionnaire, tall purplish foliage, vivid crimson flowers; T. S. Ware, orange-scarlet. These comprise a dozen of the very finest kinds, and though from description they may seem to be similar to each other in color, they are really distinct, either in growth or shade of color. The best time to obtain a stock of Cannas is when the plants are in a dry state in autumn; they will then travel as safely as bulbs, and I am taking with me to India a large number of the best kinds. I can foresee what grand plants they will be in masses in the open, as the common *Canna indica* is one of the most effective plants there in the garden-landscape.

At Veitchs', at Chelsea, one may see another new race of hybrids which is purely of English origin. These are the hybrid Streptocarpuses, which Mr. Watson has already mentioned. It may be well to add, however, that these new Streptocarpuses are regarded here as one of the most important novelties that have been produced by skillful hybridizing. It seems but a few years ago when the species from which these hybrids have been mainly produced were obscure botanic garden-plants, and even up to within a year or so they were not generally known, and Mr. Watson had raised his first crosses at Kew long before even the nurserymen knew about them. But now that the Messrs. Veitch have taken up the thread of the work where he left off, we shall soon see these beautiful plants common in every greenhouse, for they need only to be seen to be appreciated even by those who will only look at showy plants. The species that have been worked upon were generally known in cultivation under the names of *S. Rexii*, *S. biflorus*, *S. floribundus*, *S. polyanthus* and *S. Saundersi*, but it was not until the extraordinary monophyllus species, *S. Dunni*, was introduced that any decided break was obtained. This species has a huge leaf, and produces an abundance of dull red small flowers, different in tint from any of the rest, so that there was something to work upon. Mr. Watson raised several striking crosses, among them being those named *S. Watsoni* and *S. Kewensis*, the former especially showing in its flowers the distinct reddish color of *S. Dunni*. Among the multitude of seedlings he has raised you may single out every shade, ranging from pure white to bright purple, stained with plum-purple and violet, and these are the foundation that the hybridist at Veitchs' had to work upon. Now one may see seedlings at the Chelsea nursery by the thousand, planted out in cold frames, and flowering profusely, and, naturally, some show an advance on the original Kew hybrids both in size of flower and variety and brightness of coloring. It may not be rash to predict that eventually we shall have Streptocarpus-flowers as large as those of Gloxinias, the horizontal-flowered type of which they somewhat resemble. As the Streptocarpuses are so easily grown in an ordinary frame during summer, or in a greenhouse, they are destined to become popular, and the fact that they flower so freely and so continuously for several months in the year enhances their value. I counted as many as twenty flowers on a small plant at Veitchs', and being on slender long stalks they are very suitable for cutting. Already the seed of these hybrids is enumerated in the seed catalogue of the firm, so that a pinch of seed may be obtained that would furnish enough plants for a greenhouse.

As this is the dull season for Orchids they comprise one of the features of the great Chelsea nursery, but I lingered over the other great feature at the present time, which is the Nepenthes, or Pitcher Plant house, which, at this season, after the pitchers have reached full size and color, is at its best. Among the kinds that the grower points out as being of superlative merit is the new *N. Northiana*, named after Miss North, the traveler and artist who, I believe, discovered it. It has the full-grown pitchers, over a foot long and from three inches to five inches broad, heavily spotted and striped with crimson on a pale green ground. It is extremely handsome in form also, as the broad rim of the pitcher is shaped and reflexed in a beautiful way. The other new or notable Pitchers are *N. Burkei*, *N. Curtisii superba* and *N. cincta*, which has the pitchers most beautifully marked with crimson and purple-crimson on pale green. But I consider the finest of all is *N. Mastersiana*, which has a number of red pitchers on every small plant, and has a striking effect among the others. It is

such a strong grower, and produces pitchers so freely, that it is decidedly one of the best.

Coming to Kew, one finds some remarkable plants in flower, perhaps none more interesting to the general public than the Wedding Flower of Lord Howe's Island. *Iris Robinsoniana*, which has flowered for the first time at Kew, has been illustrated in the daily papers, and has been inquired for by visitors more than any other plant during the past month. It is certainly a noble plant, producing a huge tuft of long, reflexed leaves and flower-branched spikes, five or six feet in height, on which numerous flowers expand in quick succession day after day. The blossoms resemble those of *Iris Kæmpferi*, but are smaller; they are pure white, with blotches of clear yellow at the bases of the petals. *I. Robinsoniana* has been described and figured in GARDEN AND FOREST, vol. iv., p. 355.

The "Wedding Flower" absorbs more interest at Kew than the grand climber, *Solandra grandiflora*, which is in flower close by. This, though an old plant from South America, is rarely seen in bloom. It has very large tubular, or rather funnel-shaped, flowers of a creamy white, stained with purple, inside the tube. It is a rampant climber, but may be grown and flowered in small pots, as Mr. Parker used to do, in his nursery at Tooting, in the old days.

Another climber I must mention as being a great attraction at Kew just now, and, indeed, has been throughout the summer. This is *Solanum Wendlandii* (see GARDEN AND FOREST, vol. iv., p. 258), a tropical American species, and, I consider, the finest of the cultivated species. It has huge clusters of rich, mauve-purple flowers, two inches across, which are produced abundantly and hang from the long rambling shoots in a most graceful way. It is, I believe, not in commerce yet, but when it is readily attainable it will be sought for as a choice stove climber. A more modest climber, but very pretty, is *S. Seaforthianum*, which is a less vigorous plant, and bears much smaller flowers in drooping clusters. This is also in flower in the stoves at Kew.

Kew. *W. Goldring.*

The Bermuda Onion.

THE island of Bermuda, where the Onion, Potato, Tomato and other garden vegetables make their most vigorous growth from December to May, lies seven hundred miles due south-east from New York, and eight hundred miles due east from Charleston, South Carolina. The temperature from November to June ranges from fifty to seventy-five degrees, never higher, never lower, with never a greater monthly range of temperature than twenty-three degrees, or a greater daily range than fourteen degrees. It is in such a climate as this that the Onion grows with that mild and delicate flavor which gives the Bermuda product a special value on account of quality apart from the advantage it has of coming at an unusual season.

Fig. 72.—Harvesting Onions in Bermuda.

The seed (black seed) of this Onion is all grown in Teneriffe Island, and is of two kinds, one producing white bulbs, and the other red bulbs. The white variety matures from two to three weeks earlier than the red, but is not quite as sweet. No other seed seems to be worth planting in this climate. I have tried many kinds from all parts of the world—black seed, tops, buttons, potato onions, and many more, with the invariable result of a fine crop of "scullion"; they absolutely refuse to "bottom," while with the black seed Teneriffe nine out of ten will make fine bottoms.

The seed is very thickly sown in rows eight inches apart in seed-beds three feet wide, these beds being prepared with the most scrupulous care and enriched with enormous quantities of well-rotted cow or pig manure. The failure of these seed-

beds means the failure of the crop. The first sowing is usually made the last week in September—at the time when the northern farmer is getting ready for the long winter—and the sowing is kept up with seed of both varieties until the first week in November, and this gives a succession of plants for transplanting into the fields. This transplanting begins in December and continues until the middle of January.

The fields are little pockets of earth scattered here and there over the island, being deposits in the depression between the rocks at some period during the submergence of the island; they seldom contain an area of more than two acres, and the larger proportion of them contain less than half an acre. These fields are usually surrounded with Oleander-hedges to keep off the winter gales which are likely to do some harm to tender vegetation. The soil is prepared with great care by plowing or spading in stable-manure, sea-weed and every artificial fertilizer known in the market. Beds three feet wide are made by treading paths through the field, and in these beds the little plants, about as large as a goose-quill, are transplanted from the seed-beds. This is a rather slow process, but the Bermudian farmer finds it much the best method of cultivation. It is often asked by Americans, "Why not sow the seeds in the field to begin with, and thus save all this labor of transplanting?" In the first place, the Onion makes a better growth and forms a better bulb when transplanted, and not two out of a hundred plants are lost by transplanting, as they are sure to take root, and in two or three days are just as fresh as when they were taken from the seed-bed. Again, it takes from four and a half to five months for the Onion to mature for the market from the seed, and from two to two and a half months of this period, while the plants are in their tender growth, is spent in the seed-beds, where one man can weed and care for enough plants for ten acres. If these plants were in the fields, at this stage, it would take at least ten men to keep the weeds down, and therefore much labor is saved. Bermuda weeds do not succumb to the hoe and sun as in the north, but each weed must be carefully pulled by the roots and carried away to the pig-pen or else spaded deep in the walkways.

I suppose no land is free from plant-disease, and the Onion here has its diseases, though the only one causing much trouble is a fungus growth, attacking the leaf just as the bulb is forming, causing the leaves to rot and arresting the growth of the bulb.

When the Onion is ready for the market, men, women and children, mostly colored, are employed to pull, pack and cart to the steamer, packing the Onions in bushel crates made from box stuff brought in shooks from Maine. These crates, when ready for packing, cost about twelve cents each. During the crop season a steamer is loaded and departs for New York every Thursday. The balance of the year we only have fortnightly communication with New York.

The number of crates harvested from an acre varies with the year, season and amount of disease. I have known eight hundred crates to be gathered from an acre, but probably two hundred is nearer the average. The price varies with the season, usually opening in January at $2 a bushel box here, and rapidly dropping to $1.50, and then on down to $1 and to 75c. in May.

The average price paid here for the past six years is as follows: 1886, $1.35; 1887, $1; 1888, $1.65; 1889, 53c.; 1890, $1.44; 1891, $1.28.

The quantity shipped for the same period is as follows: 1886, 154,000 bushels; 1887, 197,000 bushels; 1888, 163,000 bushels; 1889, 227,000 bushels; 1890, 252,000 bushels; 1891, 261,000 bushels.

The total number of acres cultivated on the island in the winter of 1890-91 in Onions, Potatoes, Tomatoes and Beets was 2,422.

Much alarm was felt over the M'Kinley bill, as onions now pay to the United States a duty of forty cents per bushel, but, after all, the price kept up well through all the season. The Bermudians generally feel that they pay this tax, as that amount has to be paid before they can enter into competition with the American farmer. $104,400 was paid into the United States Treasury by somebody because of the importation of 261,000 bushels of Bermuda Onions into the port of New York during the winter of 1890-91. As the average price paid here was less than any year, except one, during the past six years, I am inclined to think we pay the tax.

Hamilton, Bermuda Island. *Russell Hastings.*

[The illustration of an Onion-field in Bermuda, on page 451, gives a fair idea of the general appearance of the scanty farm-land on the island and the ever-present Cedars.—Ed.]

Cultural Department.

Insecticides for Greenhouse Plants.

In the press of fall work the cleaning of plants is often postponed until some more convenient time, and this is usually regretted afterward when the stock is found permanently injured by the ravages of scale or other insects. Among Palms, for instance, some of the scale insects are the most troublesome, and if allowed to remain on the foliage or stems for any length of time the plant will be badly disfigured. A whale-oil soap solution, made by dissolving one ounce of the soap in one gallon of water, or a very weak kerosene emulsion, may be applied with a spray-pump or syringe about once a week, with good effect, though if a plant is badly infested with scale it will need more than mere spraying to clean it. In using the kerosene emulsion it is safest to make the solution rather weak, to guard against injury to the young foliage if the liquid drains down into the heart of the plant.

Some of the prepared insecticides, for instance, Fir-tree oil, may also be used in the same manner, and they are doubtless of some value, though much more expensive than the home-made remedies. Thrips are best controlled by the use of tobacco-stems for fumigating, or the infected plants can be dipped in tobacco-water, the latter plan being most convenient where many kinds of plants are grown in the same house. Red spider is seldom found among plants that are syringed properly, but when it gets a foothold in a warm house the plants should be carefully sponged at once.

The so-called "spot" on Pandanus, and on *P. utilis* especially, is caused by a minute mite or insect, and is not, as some have supposed, due to a fungus, and the most satisfactory remedy is thorough dusting with sulphur. The credit of this discovery should be given to Professor Halstead, of the New Jersey Experiment Station, who kindly examined specimens and suggested the remedy which has proved effective in practice.

The Ferns are subject to various insect pests, the most injurious of which are scale and thrips, and as these plants will not endure as much smoke as the insects will, it becomes necessary to depend on dipping the plants in weak tobacco solutions. Some of this trouble may be avoided, however, by keeping the Fern-house as cool as the welfare of the plants will permit during the winter. Many of the best-known species thrive admirably in a temperature of fifty degrees at night. Another troublesome pest to the Fern-grower are the snails, and while the old-fashioned method of spreading about the house cabbage-leaves or pieces of potatoes as traps is still a good one, yet a cleaner and more efficient plan is to sprinkle camphor among the plants. This gum is so obnoxious to the snails that a few pieces the size of a pea thrown in the crown of a large Adiantum will surely drive them out. Of course, the camphor needs renewing from time to time, as it soon evaporates, and, consequently, will cost rather more than the old vegetable remedies.

Among other insecticides that I have tested for general use are corrosive sublimate, one part in solution with 2,000 parts of water, and carbolic acid in various degrees of strength, but with little success in either case. Acetic ether is useful at times to destroy mealy-bugs in the flower-trusses of Ixoras or Stephanotis, but it should be applied with a camel's-hair brush. Sulphate of lime has been recommended for scale on Orange-trees, but my experiments with this mixture on some young Palms have not proved successful.

Holmesburg, Pa. *W. H. Taplin.*

Border Flowers in Autumn.

Erythrolæna conspicua.—This plant, the "Scarlet Mexican Thistle," as it has been styled, promises to be useful for sub-tropical bedding, for, though only a thistle, it has an imposing appearance when well grown, and when in flower arrests attention at once by the bright-colored bracts of the flowers. From a packet of seeds sown in February we obtained three plants, which were liberally treated, and one of these is now flowering. It is six feet high, with branches overshadowing a square yard of ground. The plant is distinct in habit, and, when in flower, very ornamental. It is necessary to sow the seed early in the year to get the plants to flower the same summer, as our seasons are too short, and, as it is, we shall not be able to obtain any seed this year.

Helianthus mollis.—Of the many species of hardy Sunflowers this is one deserving of front rank as a hardy garden-plant. I know of no species that flowers with such persistency, for since it began in July we have always had an abundance of bloom, and there are still many to follow until frost comes.

Part of our plants were obtained from Tennessee, where it is said to occur occasionally in a wild state, and is often cultivated in gardens even there. Other plants were received from another source, which, I believe, was said to have been originally New Mexico, and this is quite probable, as this species has a wide distribution in the southern and south-western states; consequently there were doubts in my mind as to its hardiness, and a plant was left out in a cold wet border last winter. It came through safely, so there need be no doubt about it in the future, for in the same border strong and established clumps of *H. orgyalis* were completely killed, and so was the double *H. multiflorus*, so often catalogued as being perfectly hardy, which it certainly is not here. *H. mollis* grows about five feet high in good soil. The flowers are large, bright yellow, of good substance, and can be cut with long stems for vases, and when it is offered to the public and becomes better known will surely be appreciated as one of our very best hardy Sunflowers.

HELIANTHUS GRANDIPLENUS.—This is our first season's experience with this new form of the common double *H. multiflorus* as introduced by Hartland, of Cork. There are said to be other forms distributed under this name, so care was taken to procure the true variety direct from the introducer. The difference in the individual flowers is not very apparent except by comparison, when it is seen at once that in the variety Grandiplenus the outer row, or guard petals, are not present, as in the older variety, making it quite distinct in that respect. Our plants, also, are much taller than in the older variety. One clump has grown eight feet high and is much more spreading in habit, the flowers also can be cut with longer stems; but these three traits may all be due to liberal treatment. It is to be hoped it will prove hardier than the older variety. Judging from the plant as it is, it is a question if there is any great advance made from the old double *H. multiflorus*, of which there are several very good single forms which do not seem to have gained popularity as they deserve, for they are as beautiful as single medium-sized Sunflowers for cutting purposes.

South Lancaster, Mass. *E. O. Orpet.*

The Water Garden.

Nymphæa Mexicana, of which Mr. Pringle wrote so charmingly in GARDEN AND FOREST (vol. iii., p. 415), may be botanically the same as *N. flava*, but it proves superior to the type in its more free-flowering habit. Growers generally find *N. flava* very slow to establish and very shy to flower, but *N. Mexicana*, in its second season here, grows strongly, with many strong runners, which quickly bloom, and it has given a long succession of its deep yellow flowers, which are attractive, though small. They are much darker than those of *N. chromatella*, and, unlike this variety, the stamens and petals are of the same shade.

N. chromatella, however, is far the best yellow Nymphæa, a strong, compact grower, easily propagated from its numerous eyes, and constantly in bloom. A strong plant, with only the root-room of a small box, has been constantly in flower since early May, and still has some buds unexpanded.

Eichornia (*Pontederia*) *azurea*, the new pond-weed introduced this year by Mr. Sturtevant, proves much superior to *E. crassipes major*, it being not more interesting, perhaps, but less weedy. The stems, produced freely, are sent out laterally, and from these flowers are produced very freely. The flowers, which are clustered on a short stem, are one inch in diameter, a dark purple, with a darker eye, and in every respect more attractive than those of *E. crassipes*. Unlike the latter plant, however, which is a weedy grower, whether floating or planted in earth, *E. azurea* requires planting in shallow places.

Elizabeth, N. J. *J. N. Gerard.*

In the Vegetable Garden.

AS the nights grow cool Celery is making its best growth. Pick off the rusted leaves, keep it clean and never let it thirst for water. It is too early to earth up the main crop, but it is well, once a fortnight, to draw a little soil about the plants needed for early use. Celery will whiten now much more rapidly than it does after the middle of October.

Lettuce can endure a light frost, but it is better to have cold frames ready. Lettuce had better be planted now in frames, but sashes should not be used, except as a protection against beating rains, until heavy frost comes. It is a good time to sow Lettuce, and if the ground is kept clean among the plants they will head in November, and the rest of the half-grown plants will head in the winter.

Spinach can still be sown in sheltered beds facing the south, and some of the plants will be fit to use before winter sets in. At all events, it will be in good condition for early spring use.

When the Asparagus begins to turn yellow it is well to cut the beds over before the seeds fall, for the young plants will prove troublesome weeds in the bed next year. If the tops are burned it will lessen the attacks of the beetles next spring.

Cabbage and Cauliflower which are still growing should be kept well hoed. If Cauliflowers do not make full-sized hearts before freezing weather they can be heeled thickly in cold frames, and will be fit to use by Christmas. If the larger Cabbage shows a tendency to burst open it is good practice to loosen their roots with a fork.

Lima Beans that are not matured can be kept through early frosts by laying down the poles so that they can be covered by newspapers or muslin; and Snap Beans can be saved for a little while if protected in the same way. If you have no Snap Beans this autumn make a memorandum now to plant some of the prolific sorts, like the Valentine, next year for autumn use.

Montclair, N. J. *S.*

Pelargonium Blight.—During the present season the variegated Pelargoniums, or Geraniums, as they are commonly called, so popular for bedding and borders, have been noticeably blighted, and in some instances so much so as to become positively unsightly. As a rule, the outer or lower leaves are the most susceptible, but not rarely the best of the large central leaves become attacked. This blight is due to at least two fungi, working singly or together, and either one of them is able to do serious mischief. One of these fungi is a Colletotrichum, akin to that causing the anthracnose of the Vine and many other cultivated plants. There is little doubt that this blight could be checked by spraying with some of the copper mixtures. A second fungus is an Aschochyta, which may be called a leaf-spot fungus. This is more inclined to produce a well-defined infested area near the centre of the leaf, but the two enemies may work together upon the leaf. The same remedy is recommended.

Nematodes in Zinnias.—My attention has been called a number of times recently to a trouble among the Zinnias, and particularly *Z. elegans*. The lower leaves prematurely die, and hang upon the stems as crumpled brown masses, giving the afflicted plants anything else than a handsome appearance. Above these the leaves are more or less blotched with light brown, the affected areas varying in size and color, but usually quite angular in outline. The whole aspect of the sick plants suggested the work of eel-worms, and a microscope examination revealed them at work in the leaf-pulp, and in great numbers. Plants thus infested are beyond recovery, and should be burned. Last season eel-worms were mentioned as occurring in quite a number of the cultivated plants, and particularly the Chrysanthemums, Coleus, Lantanas, Bouvardias, Violets and Roses.

Rutgers College. *Byron D. Halsted.*

Cestrum elegans.—This is generally grown as a climber, and is best seen trained over an arch, where its graceful flower-stems, sometimes nearly two feet in length, hang out in all directions, with clusters of tubular wax-like pink flowers. It would be a most excellent plant for cut flowers but for its strong potato-like odor when handled, an odor which is not surprising, for it belongs to the *Solanaceæ*. Grown as a pot-plant it is equally handsome, and useful for decorative purposes. Cuttings taken in winter, and planted out for the summer, grow to a size which makes a twelve-inch pot necessary when they are lifted in autumn. My plants are showing flower-buds now in the open ground, and will bloom in the greenhouse through November and December, when I take a few more cuttings and throw the old plants away. Although used as a climber when grown in the open air, it shows no tendency to climb in the house, and makes good bushy plants without any trouble.

Peristrophe speciosa.—This handsome winter-blooming greenhouse plant is of very easy culture, and should be common. Cuttings which have been rooted during the winter, when planted out-doors make very neat plants by autumn, and, unless large plants are needed, they are more satisfactory in every way than old plants cut down, which are generally used. To have them bushy, they need to be "topped" two or three times during the season. They can be lifted with a good ball of earth, and usually go into a seven-inch pot. Their foliage is handsome. The flowers are labiate, crimson or pink in color, and are sessile on conical heads.

Wellesley, Mass. *T. D. Hatfield.*

Correspondence.

The Boston Public Garden.

To the Editor of Garden and Forest:

Sir,—There are some questions that I should be glad to have answered with regard to the floral decorations of the Boston Public Garden.

We who live in the neighborhood of the Modern Athens naturally go there for our ideas about gardening, as well as other things, and we feel as if the Public Garden, which, next to the State House and Faneuil Hall, is an object of legitimate pride to that city, ought to furnish for the million the best sort of example.

That its directors, whoever they may be, understand their business no one ventures to doubt, but do they not make a mistake in trying to popularize the garden by introducing objects not in the best taste?

Is it conceivable, however the pure Greek artistic sense displayed itself in gardens, that Pericles and Aspasia would ever have encountered, at the foot of Mars Hill, such a horticultural construction as that which causes the bosom of the Modern Athenian to dilate with civic pride—Item, a spread eagle with a glass eye, complicated with a design of anchors, coiled ropes, and the shield of our country, surmounted by the letters U. S. N., painfully manufactured, at enormous expense, of minute plants of the requisite colors, and resembling nothing so much as those feats in worsted-work rugs which are the glory of agricultural fairs?

Would the Attic idea of color and form have found expression in floral hearts and rounds, aces of spades, crescents and likenesses to half-eaten doughnuts, brought out in shades that swear at each other in the loudest tones? Pink and yellow, deep crimson and scarlet, orange and rose-color, sometimes all six together in one bed, seem to be a favorite combination, to the defiance of harmony and repose.

Boston delights in sending missionaries of its somewhat Philistine civilization to Japan, why does it not occur to the philanthropists of the Flowery Kingdom to send it a few in return, missionaries of taste, whose "oriental eye" should educate it to a comprehension, if not of subtleties of color, at least to reticence in its use, and teach it, once for all, that the desire to mix crimson Coleus with scarlet Geranium is a temptation of the devil to be strenuously resisted.

Might it it not be well, too, that the same apostle should direct the curves of those labyrinthine paths, so that, however sinuous their course, they may lead somewhere, and not necessarily force you to come out, like the well-known parliamentary speaker, at the same hole you went in at.

Is the confusion of effect desirable or necessary? Is there not some way by which we could be given masses of color, and yet an element of repose? It is not that one objects to formal gardening, but to the lines on which that formal gardening is laid down. Certain ideas have occurred to me which I venture to submit for your approval, asking for correction if they seem unreasonable. And what especially strikes me is the thought of the great amount of money and labor necessary to maintain the grounds in their present condition, which, perhaps, might be expended to better advantage.

The Public Garden is in itself a lovely spot, well shaded, refreshing, with agreeable variety of shrubbery and grass, around a pond of shining water, that is a comfort to the eye and a means of amusement to innumerable children. With some few and inexpensive changes and some guiding taste, it seems as if it might readily be made the thing of beauty that it ought to be, to comport with the elegance and charm of the picturesque city of which it should be a thoroughly artistic ornament.

It is now conducted on an unnecessarily costly scale. The elaborate and doubtful floral designs once banished, with the Palms and Tree Ferns, money would abound for more pleasing adornment. The paths should, in the first place, be reconstructed, so that they would lead from one point to another without maddening turns upon themselves. The restricted patches of greensward should be combined into broad stretches of almost unnbroken lawn, shaded and cool, with borders and vistas of shrubbery that should seclude, and, at the same time, seemingly increase its extent.

Geometrical flower-beds and formal gardening need not be given up, but they should be confined, as in the great pleasure-grounds of Europe, to a central parterre in the neighborhood of the leading walk across the bridge, while the rest of the garden should be kept simple and restful.

The taste that demands eagles, and anchors, and designs drawn from the poker-table should be ignored, and an effort made to educate the public to an appreciation of something better. The instinct for beauty is strong in our people; though often misdirected, it can be easily influenced in the right direction by proper example in those public places which they frequent, and from which they bring away new ideas. The harm done by setting a false standard for imitation is incalculable.

The Public Garden should, above all things, be made a unit, and an intelligent design should animate the whole, and the varying parts be made interdependent. A pleasure-ground of this description is not a botanic garden, where it is necessary to exhibit myriads of incongruous things. Harmony and grace, and beauty, and continual bloom there should be, but not violent contrasts nor inharmonious groupings. There are numerous brilliant and beautiful flowers which could be kept protected in winter at a less cost than the great tropical things, that look so out of place when the east wind is whistling about their elephantine ears, and which would really render the grounds far more gay and charming and delightful to the popular eye.

The opportunities of the pond are wholly neglected, and we see none of those interesting groups of Lotus and Water Lilies that prove so attractive in New York, both in Central Park and in Union Square. If it is objected that the boats are incompatible with the Lilies, why could not some portion of the lake be set apart for their cultivation, and still leave room for the amusement of the children? The people all love these delicate flowers, which shows that they do not demand incongruous groupings for their satisfaction.

Why not make the Public Garden a school of appropriate floral design, rather than a museum of curiosities? The best intelligence and the subtlest perception are none too good to devote to it, since it should be properly regarded as a great educator. What people see here they imitate in their cemeteries, in their gardens, on their lawns. If purple and scarlet are seen combined in the Public Garden, you will find the same enormities repeated in handsome country places, whose gardeners think they have imported a brilliant idea. Canons of elegance must be laid down; beauty must be inculcated by a positive standard; teach what is lovely and of good repute, and education conquers even bad taste. How are we to know the evil from the good but by some striking example of loveliness and harmony to which all can repair for new inspiration? Such an example it is the duty of the Public Garden to set. To know a thing is wrong is easy; to know how to set it right is another matter; and nothing can be more idle than criticism which fails to suggest a remedy. This garden is a boon we all appreciate; the plants in it are remarkably well grown and healthy; we all desire that it should be perfect in beauty, and we ask nothing better than to be shown the paths of beauty that we may walk therein. Knowledge of plants is far more common than a proper sense of their artistic distribution, and it is for these we need the canons and the guiding hand.

Our Japanese apostle might find us unwilling listeners to the preaching of his crusade; but in his land, generations of cultured taste have made the very infants adepts, while the language of their subtle art is still foreign, and hard for many of us to learn. But its restraint, its simplicity, its delicate effect, we can study and practice in our clumsier fashion, until the lessons of ages shall have trained us, too, to a larger, a more subtle sense of what is alike beautiful and befitting.

Newton, Mass. *Sidney Hyde.*

Plants for Shady Places.

To the Editor of Garden and Forest:

Sir,—Will you kindly inform me whether *Daphne Mezereum* would thrive on the north side of a house, where the sun shines about two hours in the morning and perhaps a little longer in the late afternoon?

Millbrook, N. Y. *J. J. D.*

[Few plants can flower successfully on the north side of buildings when they are shaded during the greater part of every day. For such positions plants like the Periwinkle or the Ivy, whose chief beauty consists in their evergreen foliage, usually give greater satisfaction.—Ed.]

Periodical Literature.

In an article called "Woodlands," recently published in the *Nineteenth Century*, Mr. Herbert Maxwell reviews the extent and condition of the forest of Great Britain, and discusses the report of the committee of the House Commons which was appointed to investigate this subject in 1885, and formulated its conclusions two years later. This committee declared

themselves "satisfied that the management of our woodlands might be materially improved . . . and that some considerable proportion of the timber now imported to the (annual) value of £16,000,000 might, under more skillful management, be raised at home." They pointed out that, "whereas nearly every other civilized state possesses one or more forest-schools, there exists in this country (although it boasts a Department of Woods and Forests) no organized system of forestry-instruction except in connection with the Indian service." They unanimously agreed "in recommending the establishment of a Forest Board, of which the main functions should be the establishment of forest-schools, or, at least, of a course of instruction and examination in forestry." From the conclusions of these gentlemen Mr. Maxwell dissents. Although he says they deserve gratitude for having proved "beyond the possibility of doubt that British forestry is at a lamentably low level, and that hardly any effort is being made to redeem what might be a source of public and private wealth from the state to which it has been reduced by ignorance, indolence and indifference," he protests that "it is not possible to endorse their proposal to create a new department of the government to revivify it." He believes that reform should be brought about by concerted action on the part of large land-owners, and that "the first step in the right direction will be taken . . . by summoning a meeting in London of land-owners and others interested in the matter to discuss the position and to take counsel with the managers of the English and Scottish arboricultural societies with the view of securing their co-operation in undertaking the work which the select committee has rightly described as necessary, the neglect of which is discreditable."

Mr. Maxwell's article is suggestive reading for all who are interested in the subject of forests and forestry, but it supplies, of course, little help to those who are anxious to see our own forest-problems satisfactorily disposed of. The condition of our forests is so unlike that of English woodlands, their ownership is so differently distributed, the extent of our country is so much greater than that of Great Britain, that American and English needs cannot be discussed from the same point of view.

Mr. Maxwell's article contains, however, many items that should interest any reader. We read a family likeness to ourselves in his account of the way in which, in most parts of England, the minor products of the forest are systematically wasted. In Surrey, he says, convenient little fagots "made of small brush-wood bound together with a green withe" are used, in continental fashion, for the lighting of fires; but they are unknown in the northern counties and even in London, "whose countless fires are kindled by the much less effective fagots of split-wood." Brush-wood fagots, he explains, "have this advantage over fagots of split-wood, that they kindle much more readily, bursting into a blaze at once, whereas a fire laid with the larger sticks often requires re-kindling."

As an example of the lack of knowledge possessed by English owners and land-agents, with regard to even the commonest native trees, the author cites the case of a gentleman in the south of Scotland who, desiring to make a plantation of Oaks, procured with great pains fine acorns from the south of England. Here the indigenous Oak is *Quercus robur pedunculata*, while in the north of England and in Scotland it is *Q. robur sessiliflora*, the so-called "Durmast Oak." The latter flourishes if planted in the south, but the former does not find proper conditions of growth in the north, and, consequently, though "thirty, forty and fifty years have gone by since these woods were planted, the present owner of them has to deplore that the energy and good intentions of his predecessor were not better directed."

Under the rule of the Romans, which lasted some four centuries, says Mr. Maxwell, the vast forests that had covered England were largely swept away, especially in the north, where strategic considerations long remained paramount. But as early as the twelfth century strict laws were formulated in Scotland for the preservation of what remained, and in 1513 the Scottish Parliament insistently commanded the plantation of woods and hedges in denuded districts, and ordered land-owners to compel their tenants to plant on their holdings one tree yearly for every "mark" of land. "Many traces of this legislation may be recognized to-day in the scenery of Scotland. In every district round old houses or house-sites stand aged Ash-trees, the planting of which was specially encouraged for the manufacture of pike-staves, the pike being the national weapon of Scotsmen as the yew-bow was of Englishmen"; and, we may add, ash-wood having been the favorite material for spears ever since the days of the mighty Achilles.

But denudation went on in Scotland, unchecked by further legislation, until, in the last century, her people had leisure to appreciate their necessities and to attempt to meet them. Then many new plantations of great extent were made, and "a pathetic monument of the good intentions of one great Highland chief in this respect still remains. Just before the rising in 1745 Cameron of Lochiel received a quantity of young trees for planting round Achnacarry, his principal seat; when the summons came for the clan to join the standard of Charles Edward, the plants were hurriedly healed-in, in long lines, to await the return of more peaceful times. But the men who were to have set them out 'came back to Lochaber no more'; the saplings struggled into growth in the trenches as best they could, and there they stand to this day, a double row of Beeches, their silvery stems so closely crowded that a man may hardly force his body between some of them, and under this dark canopy of foliage, the outer boughs of which trail in the swift-running Arkaig, there broods a green twilight the long summer through."

Exhibitions.

The Elizabeth Horticultural Society.

THE flower-show of the Horticultural Society of Elizabeth, New Jersey, held on September 17th and 18th, was of more than local interest. In the early spring, the society, at the suggestion of one of the officers, Mr. T. K. Pembrook, concluded to offer a packet of Aster-seeds to any child who would agree to plant them and bring the result to an exhibition to be held in September, and some five hundred packets were applied for in response to an advertisement in the local journals. This was, so far, encouraging, showing rather more widespread interest than the society had expected, but there was some doubt as to the result, the successful growing of plants from seed sometimes puzzling older persons. The plants were brought in in great numbers, something over five hundred plants in all, and, on the whole, in creditable condition, scarcely up to the florists' standard but vastly more interesting. Taking them as a lot, they indicated probably too much attention, care having degenerated to coddling. There were pathetic exhibits of poor little single weaklings, starved and colorless, on which evidently great care had been expended. The most interesting plants were in two little window-boxes, from two little girls who had no garden, but had managed to grow the greatest variety from their packets of seed, and secured the prizes in the class. Such a curious lot of dwarf, starved plants perhaps never grew in the same space, but it was a pleasure to see the winning cards on them, as they spoke of so much simple, loving, patient care.

The wild flowers collected by the children were not a very satisfactory exhibit, owing to a failure to provide that they should be named and arranged for effect. The true province of a horticultural society would seem to be not the speculation in exhibitions, but the endeavor to induce the cultivation of plants and flowers by the masses, and such experiments as that of the Elizabeth society, if repeated, are sure to result in much good. The large hall was closely filled with collections of flowers and plants from amateurs and florists. The amateur exhibit was led by a grand mass of tropical plants from H. W. and R. Pierce, which occupied a space some forty by fifteen feet, in the centre of the hall. Among these were fine Cycads, Musas, Palms, Marantas, Ferns, etc. Other amateur exhibits were Palms, Dracænas, Tuberous Begonias, etc., by H. A. Haines; garden-flowers, by T. K. Pembrook, T. C. English, and F. K. Day; Eucalyptus, *Grevillea robusta*, Coffee-plants, etc., by E. C. Woodward; specimens of Papyrus, and Aquatics, Bamboos, interesting Begonias, etc., by J. N. Gerard.

The local florists exhibited some fine decorative plants, the first prize for which was awarded to John White. For the best display of cut flowers the first prize was given to J. W. Blakeley. Other prizes went to Miss Hutchinson, J. M. Horsburgh and J. W. Bonnell for floral designs.

The Elizabeth Nursery Company exhibited rare Retinsoporas and shrubs.

One of the exhibits which attracted most attention was a complete collection of rare Nymphæas, Nelumbiums and various Aquatics from Wm. Tricker, Dongan Hills, New York. From the roseries of S. C. Nash, Clifton, New Jersey, came a mass of the fragrant and popular American Beauty Roses.

The interest in this exhibition was so great that the society is considering a Chrysanthemum show during the approaching season.

Notes.

Immense tracts of the Pine-forests which cover the sandy shore regions called the *Landes* in the vicinity of Bordeaux, in France, were recently destroyed by fire, the flames spreading so rapidly that at least ten persons—wood-cutters, hunters and charcoal-burners—are known to have perished.

Under the title "Berlin et son Exposition Horticole de 1890," Monsieur Ernest Bergmann has reprinted from the pages of the *Journal de la Société Nationale d'Horticulture de France* his account of this important exhibition, in which he took part as a member of the jury for awarding the prizes.

A new edition of Gray's "Manual of Botany" has just been issued for the special use of the working botanist. The plates are the same as those from which the larger volume was printed, but this is reduced to 12mo size, printed on thin, yet tough, paper, bound in limp leather covers, and is sold for $2.

We rarely see the Sweet Birch, *Betula lenta*, planted for ornament, but if allowed room to develop into its full proportions it is one of the most graceful of trees. In Laurel Hill Cemetery, in Philadelphia, there is a specimen which stands by itself and has formed an open spreading head of great size, and among the many noteworthy trees in that place this is universally considered one of the most beautiful.

The variety of *Solanum jasminoides*, which has been largely distributed under the name of Grandiflorum, is certainly an admirable summer climber for the garden. The racemes are much larger and more open than those of the type and often carry as many as twenty flowers; while the flowers themselves are larger, some of them being an inch and a quarter across. Its foliage is clean and healthy, and of the deepest green, and forms an admirable background to the pure white flowers which are borne in abundance.

A fountain covered by a large stone canopy, ornamented with a bronze figure of Hebe, has recently been erected in Tompkins Square in this city. The name of its giver has not been made public, but his gift passed through the hands of the New York Moderation Society. The fountain will supply ice-water to all comers free of charge, and will be administered by a keeper who will open the faucets at eight in the morning and close them at midnight. It is estimated that in this poor and densely crowded district fully 5,000 persons will daily avail themselves of the luxury thus supplied.

According to the *Popular Science Monthly*, there are in Hungary about 22,000,000 acres of forest, the Government owning some 3,500,000 acres, while the rest is divided between public corporations and individual owners. "The Government does not sell any part of its forests, but buys more each year. In some parts of the country, as in the eastern region of the Carpathians, woods are found of several thousand acres in extent, consisting for the most part of Red Beech. This is used for fire-wood, carriages, staves and agricultural implements, and in the manufacture of bent wood. There are few fires, and they seldom permanently damage the woods. There are large resinous forests in Transylvania, but they are not very accessible; and there are also some in the district of Marmaros, in the north-east of the country."

The Government report on the condition of the crops notes that the condition of the Potato crop has never been so uniformly good since the Department of Agriculture began to issue these bulletins. This shows the continued prevalence, in all parts of the country, of favorable conditions. Last year there was a decline of twelve points, during August, in the condition of this crop, which followed the drought in the central and trans-Mississippi states. This year the rainfall has been distributed, generally, in accordance with the needs of the crop, although there has been some local excess in sections of the country lying east of the Alleghanies, and deficiencies over small areas in the Ohio Valley. The crop, however, is not entirely out of danger, since the blight appeared during the closing days of August, and the weather conditions since then have been favorable to the development of this disease.

A law was passed during the last session of the California Legislature making it the duty of the County Board of Horticultural Commissioners to inspect orchards, nurseries, or other places in their jurisdiction where they shall deem it necessary, and if such places are found infested with the scale insect, the codlin moth, or other pests injurious to plants or trees, that they shall notify the owner of such a fact, and that they shall request such owner to eradicate or destroy the said pests within a time specified. Such orchards or nurseries are adjudged to be public nuisances, and when their owners shall refuse to abate the same within a specified time it shall be the duty of the County Board to destroy said insects, and the expense thereof shall be a county charge. All such sums shall be a lien on the premises from which said nuisance has been removed, and may be recovered by an action against the property, in the name of the county making such payment, and when the property is sold, enough from the proceeds shall be paid into the county treasury to satisfy the lien and costs, and the overplus, if any there be, shall be paid to the owner of the property.

No. 7 in the "Evolution Series" of pamphlets, published to give permanent form to the lectures and discussions organized by the Brooklyn Ethical Association, is written by Mr. Frederick J. Wulling, and is called "The Evolution of Botany." Its title is somewhat misleading, for it is simply a brief history of the progress of botanical research and knowledge, which closes with a rather forced attempt to prove that this history establishes the truth of the doctrine of evolution. But in itself the pamphlet is an excellent one, supplying an account of the development of the science which, for combined clearness and brevity, we do not remember to have seen equaled. The only faults we have to find with it are, that the exact character of the "natural system" of classification, now universally adopted by botanists, might have been more definitely explained, and that the list of American botanists and explorers might have been drawn up with a keener regard for their relative degrees of distinction. For instance, the value of the labors of Rafinesque, Michaux and Pursh should have been more clearly pointed out than by the including of their names in a list of some dozen persons who have "contributed papers on botany to the various scientific journals."

Mr. C. Wolley Dod contributes to a recent issue of *The Garden* an account of the Madeira Orchis (*Orchis foliosa*), which he finds succeeds well in his English garden, where it is growing even more vigorously than the allied British species, as it is easy to believe from the illustration made from a photograph, and which seems to us to be about as perfect and delightful an illustration of its kind, both in composition and in the exquisite detail with which the wood-engraving has been executed, as we remember to have seen. In speaking of this plant Mr. Dod, who is one of the most skillful cultivators of hardy plants in England, recommends that "it must be planted in a sheltered place in good, moist, open loam or peat, where the soil does not dry up in summer. The shade of trees is not bad for it, provided their roots do not drain the ground too much, but the food of trees and the food of Orchises seem so different that I have seen this plant growing very fine within the limits of the roots of Lime-trees, especially near water where the subsoil is never dry. It seems to like rich feeding, and, though manure is generally forbidden for bulbs of this kind, I find a top-dressing of leaf-mold, mixed with well-decayed stable refuse, very beneficial to growth. August, when the annual growth is completed but before the leaves have changed color, is the best time for separating the bulbs, when they have increased into a mass and want replanting. Neither this nor any other plant ought to be moved when resting. *O. foliosa* does very well in large pots, wintered in a cold frame and moved into the greenhouse to flower, as they are there protected from the very injurious spring winds. Among the variable native Orchises included under the names of *O. maculata* and *O. latifolia*, individuals may be found well worth cultivating, especially amongst those intermediate forms which are not uncommon where these two species grow together."

Catalogues Received.

The Dingee & Conard Company, West Grove, Pa.; Bulbs, Hardy Shrubs and Plants, etc.—B. A. Elliott Company, Pittsburgh, Pa.; "Fall Garden Work," with a List of Plants for Fall Planting.—Peter Henderson & Co., 35 and 37 Cortlandt St., New York, N. Y.; Bulbs, Plants and Seeds for Autumn Planting.—George S. Josselyn, Fredonia, N. Y.; American Grape Vines, Small Fruit Plants, etc.—Jacob W. Manning, Reading, Mass.; Trade List of Hardy Florists' Flowers.—John R. & A. Murdoch, Pittsburgh, Pa.; Trees, Bulbs, Flowers.—Phœnix Nursery Company, Bloomington, Ill.; Wholesale Catalogue of Trees, Plants, Shrubs, Roses, Bulbs, etc.—Pitcher & Manda, Short Hills, N. J.; Special Offer of the Entire Collection of Orchids brought together by Mr. B. Onorato, New Orleans. Price List of Stove and Greenhouse Plants. Descriptive Bulb and Seed Catalogue.—Rea Brothers, Norwood, Mass.; Trade Offer of Hardy Herbaceous Perennials. Appendix to Descriptive Catalogue.—Vilmorin, Andrieux & Co., Paris, France, Theo. Paest & Co., Sole Agents, 26 Barclay Street, New York, N. Y.; Electrotypes of Original Designs of Flowers, Fruits, Vegetables, etc.—C. B. Whitnall & Co., Milwaukee, Wis.; Bulbs.

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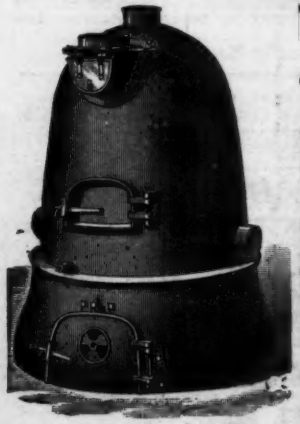

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